Journal of Ecology

Volume 82
1994

EDITORS
Jonathan Silvertown
Alistair Fitter
Jan van Groenendael

MANAGING EDITOR
Lindsay Haddon

EDITORIAL BOARD
M. J. Crawley
M. Fenner
D. R. Foster
D. J. Gibson
A. J. Gray
L. Huenneke
M. J. Hutchings
R. L. Jefferies
A. J. Lack
J. A. Lee
K. Pregitzer
B. Schmid
P. D. Moore
R. Turkington
M. Williamson
F. I. Woodward

Published for the British Ecological Society by
Blackwell Scientific Publications

OXFORD LONDON EDINBURGH BOSTON
MELBOURNE PARIS BERLIN VIENNA

©1994 British Ecological Society

Authorization to photo-copy items for internal or personal use, or the internal or personal use of specific clients, is granted by British Ecological Society for libraries and other users registered with the Copyright Clearance Center (CCC) Transaction Reporting Service, provided that the base fee of $10.50 per copy is paid directly to CCC, 27 Congress Street, Salem, MA 01970, USA. This consent does not extend to other kinds of copying, such as copying for general distribution for advertising or promotional purposes, for creating new collective works or for resale.

Typeset by BPC Digital Data, Glasgow
Printed by the Alden Press, Oxfrod.

Published by Blackwell Scientific Publications Ltd
Osney Mead, Oxford OX2 0EL, UK
25 John Street, London WC1N 2BL, UK
23 Ainslee Place, Edinburgh EH3 6AJ, UK
238 Main Street, Boston, MA 02142, USA
54 University Street, Carlton, Victoria 3035, Australia
1 rue de Liue, 75006 Paris, France
Düsseldorfer Straße 38, D-10707 Berlin, Germany
Feldgaße 13, A-1238 Vienna, Austria

ISSN 0022-0477

This journal is covered by *Current Contents*, *ASCA*, *Geo Abstracts*, *GEOBASE*, *Science Citation Index*, *Biological and Agricultural Index*, *Chemical Abstracts* and *CABS* (*Current Awareness in Biological Sciences*).

Contents

Volume 82, Number 1, 1994

1 Editorial

3 Variation in individual growth and the population structure of a woodland perennial herb, *Paris tetraphylla*
T. HARA & M. WAKAHARA

13 Temporal and structural components of ramet independence in the clonal perennial herb, *Potentilla simplex*
D. K. WIJESINGHE

21 Biomass allocation among reproductive structures in the dioecious shrub *Oemleria cerastiformis* – a functional interpretation
J. A. ANTOS & G. A. ALLEN

31 Spatial competition between grasses – rates of mutual invasion between four species and the interaction with grazing
J. SILVERTOWN, C. E. M. LINES & M. P. DALE

39 Spatiotemporal patterns in the components of regeneration of four sympatric tree species – *Acer rubrum*, *A. saccharum*, *Betula alleghaniensis* and *Fagus grandifolia*
G. HOULE

55 Carbon dynamics in a forested peatland in north-eastern Ontario, Canada
D. J. CHARMAN, R. ARAVENA & B. G. WARNER

63 The spatiotemporal effects of nitrogen and litter on the population dynamics of *Arabidopsis thaliana*
L. THOMPSON

69 Germination strategies during grassland succession
H. OLFF, D. M. PEGTEL, J. M. VAN GROENENDAEL & J. P. BAKKER

79 Successional patterns of mortality and growth of large trees in a Panamanian lowland forest
K. MILTON, E. A. LACA & M. W. DEMMENT

89 Using forest patchiness to determine pollen source areas of closed-canopy pollen assemblages
S. T. JACKSON & A. WONG

101 Demography of *Cirsium vulgare* in a grazing experiment
J. M. BULLOCK, B. CLEAR HILL & J. SILVERTOWN

113 Vegetation dynamics of the forest edge – trends in space and successional time
G. R. MATLACK

125 Disturbance regime and disturbance interactions in a Rocky Mountain subalpine forest
T. T. VEBLEN, K. S. HADLEY, E. M. NEL, T. KITZBERGER, M. REID & R. VILLALBA

137 An age–altitude matrix analysis of Hawaiian rain-forest succession
G. H. APLET & P. M. VITOUSEK

149 Influence of seed size and seedling ecological attributes on shade-tolerance of rain-forest tree species in northern Queensland
O. O. OSUNKOYA, J. E. ASH, M. S. HOPKINS & A. W. GRAHAM

165 Effects of genetic diversity in experimental stands of *Solidago altissima* – evidence for the potential role of pathogens as selective agents in plant populations
B. SCHMID

177 On the difficulties of measuring oxygen release by root systems of wetland plants
B. K. SORRELL & W. ARMSTRONG

185 Response to the paper 'On the difficulties of measuring oxygen release by root systems of wetland plants' by B. K. Sorrell & W. Armstrong
B. L. BEDFORD & D. R. BOULDIN

Forum papers

187 Litter decomposability – a neglected component of plant fitness
F. BERENDSE

191 Why plants can be too attractive – a discussion of measures to estimate male fitness
P. G. L. KLINKHAMER, T. J. DE JONG & J. A. J. METZ

Biological Flora of the British Isles

195 *Hieracium pilosella* L. (*Pilosella officinarum* F. Schultz & Schultz-Bip.)
G. F. BISHOP & A. J. DAVY

211 **Reviews**

Volume 82, Number 2, 1994

217 The influences of tree biology and fire in the spatial structure of the West African savannah
M. E. HOCHBERG, J. C. MENAUT & J. GIGNOUX

227 Tall understorey vegetation as a factor in the poor development of oak seedlings beneath mature stands
C. G. LORIMER, J. W. CHAPMAN & W. D. LAMBERT

239 Nucleation and facilitation in saltmarsh succession: interactions between *Spartina maritima* and *Arthrocnemum perenne*
E. M. CASTELLANOS, M. E. FIGUEROA & A. J. DAVY

249 The role of seed size in seedling establishment in dry soil conditions – experimental evidence from semi-arid species
M. R. LEISHMAN & M. WESTOBY

259 The effect of clipping on interclonal competition in the grass *Holcus lanatus* – a response surface analysis
J. M. BULLOCK, A. M. MORTIMER & M. BEGON

271 VA mycorrhizal infection in relation to edaphic characteristics and disturbance regime in three lowland plant communities in the south- western Cape, South Africa
N. ALLSOPP & W. D. STOCK

281 A comparison of species richness and traits of riparian plants between a main river channel and its tributaries
C. NILSSON, A. EKBLAD, M. DYNESIUS, S. BACKE, M. GARDFJELL, B. CARLBERG, S. HELLQVIST & R. JANSSON

297 Growth and photosynthesis of *Pinus sylvestris* at its altitudinal limit in Scotland
J. C. JAMES, J. GRACE & S. P. HOAD

307 Growth responses of four sub-Arctic dwarf shrubs to simulated environmental change
A. N. PARSONS, J. M. WELKER, P. A. WOOKEY, M. C. PRESS, T. V. CALLAGHAN & J. A. LEE

319 Treefalls, crown asymmetry, and buttresses
T. P. YOUNG & V. PERKOCHA

325 Effect of *Neobuxbaumia tetetzo* on growth and fecundity of its nurse plant *Mimosa luisana*
A. FLORES-MARTÍNEZ, E. EZCURRA & S. SÁNCHEZ-COLÓN

331 Tiller dynamics of two grasses – responses to grazing, density and weather
J. M. BULLOCK, B. CLEAR HILL & J. SILVERTOWN

341 Growth rules in clonal plants and environmental predictability – a simulation study
B. OBORNY

353 Flowering and fruiting patterns in the temperate rainforest of Chiloé, Chile – ecologies and climatic constraints
C. SMITH-RAMÍREZ & J. J. ARMESTO

367 Plant species richness – the effect of island size and habitat diversity
D. D. KOHN & D. M. WALSH

379 Demography of shallow eelgrass (*Zostera marina*) populations – shoot dynamics and biomass development
B. OLESEN & K. SAND-JENSEN

Forum

391 Climate change and the British scene
D. J. BEERLING & F. I. WOODWARD

399 Plant size and reproductive success through female and male function
T. J. DE JONG & P. G. L. KLINKHAMER

Biological Flora of the British Isles

403 *Phleum arenarium* L. (*Phalaris arenaria* Willd.; *Chilochloa arenaria* P. Beauv.)
W. H. O. ERNST & A. J. C. MALLOCH

415 The Ecological Flora Database
A. H. FITTER & H. J. PEAT

Referees used in 1993

Reviews

Volume 82, Number 3, 1994

437 Role of ice scouring and goose grubbing in marsh plant dynamics
L. BÉLANGER & J. BÉDARD

447 Phenotypic plasticity of size–fecundity relationships in *Arabidopsis thaliana*
M. J. CLAUSS & L. W. AARSSEN

457 The ecology of severe moorland fire on the North York Moors: chemical and physical constraints on moss establishment from spores
P. A. THOMAS, M. C. F. PROCTOR & E. MALTBY

475 An experimental investigation into the effects of atmospheric nitrogen deposition on two semi-natural grasslands
M. D. MORECROFT, E. K. SELLERS & J. A. LEE

485 Spatial patterns of roots in a semiarid grassland: abundance of canopy openings and regeneration gaps
P. B. HOOK, W. K. LAUENROTH & I. C. BURKE

495 Advantages of clonal growth in heterogeneous habitats: an experiment with *Potentilla simplex*
D. K. WIJESINGHE & S. N. HANDEL

503 Consequences of habitat heterogeneity for availability of nutrients in a dry tropical forest
S. ROY & J. S. SINGH

511 High benefits of clonal integration in two stoloniferous species, in response to heterogeneous light environments
J. F. STUEFER, H. J. DURING & H. DE KROON

519 Relationships of fire, biomass and nutrient dynamics along a vegetation gradient in the Brazilian cerrado
J. BOONE KAUFFMAN, D. L. CUMMINGS & D. E. WARD

533 Fine root dynamics in a northern hardwood forest ecosystem, Hubbard Brook Experimental Forest, NH
T. J. FAHEY & J. W. HUGHES

549 Host–pathogen dynamics in experimental populations of *Silene alba* and *Ustilago violacea.* I. Ecological and genetic determinants of disease spread
P. H. THRALL & A. M. JAROSZ

561 Host–pathogen dynamics in experimental populations of *Silene alba* and *Ustilago violacea.* II. Experimental tests of theoretical models
P. H. THRALL & A. M. JAROSZ

571 Patterns of female fertility in heterostylous *Primula sieboldii* under severe pollinator limitation
I. WASHITANI, R. OSAWA, H. NAMAI & M. NIWA

581 Palaeolimnological evidence for the acidification and contamination of lakes by atmospheric pollution in western Ireland
R. J. FLOWER, B. RIPPEY, N. L. ROSE, P. G. APPLEBY & R. W. BATTARBEE

597 Seasonal and shorter-term changes in surface-water chemistry on four English ombrogenous bogs
M. C. F. PROCTOR

611 Changes in nitrogen mineralization, tissue nutrient concentrations and biomass compartmentation after cessation of fertilizer application to mown grassland
H. OLFF, F. BERENDSE & W. DE VISSER

621 A model of patch dynamics, seed dispersal, and sex ratio in the dioecious shrub *Lindera benzoin* (Lauraceae)
M. L. CIPOLLINI, D. A. WALLACE-SENFT & D. F. WHIGHAM

635 Competitive effect and response rankings in 20 wetland plants: are they consistent across three environments?
P. A. KEDDY, L. TWOLAN-STRUTT & I. C. WISHEU

645 Post-dispersal seed predation in grassland: its magnitude and sources of variation
P. E. HULME

653 Exploitation of patchily distributed soil resources by the clonal herb *Glechoma hederacea*
C. P. D. BIRCH & M. J. HUTCHINGS

665 Effects of fire season and herbivory on reproductive success in a clonal forb, *Pityopsis graminifolia*
J. S. BREWER & W. J. PLATT

Forum

677 Do insect pests promote mutualism among tropical trees?
E. G. LEIGH, JR

Biological Flora of the British Ilses

681 *Tripleurospermum inodorum* (L.) Schultz Bip. (*Matricaria inodora* L., *Matricaria maritima* auct. p.p. non L., *Matricaria perforata* Mérat, *Tripleurospermum perforatum* (Mérat) Wagenitz, *Tripleurospermum maritimum* (L.) Schultz Bip. p.p. non L.)
Q. O. N. KAY

699 **Reviews**

Volume 82 Number 4, 1994

709 **Announcement: Winner of the John L. Harper Young Investigator's Prize**

711 Dispersal and infection in mistletoe metapopulations
J. MCC. OVERTON

725 Recent fluctuations of the lichen–spruce forest limit in subarctic Québec
C. LAVOIE & S. PAYETTE

735 Effects of plant size and morphological constraints on variation in reproductive components in two related species of *Epilobium*
J. STÖCKLIN & P. FAVRE

747 Sprouting of trees in Jamaican montane forests, after a hurricane
P. J. BELLINGHAM, E. V. J. TANNER & J. R. HEALEY

759 Reproductive phenology of a tropical dry forest in Mudumalai, southern India
K. S. MURALI & R. SUKUMAR

769 Effect of size structure, forest floor type and disturbance regime on tree species composition in a coniferous forest in Japan
K. TAKAHASHI

775 Pool-and-hummock patterning in a southern Pennine blanket mire I. Stratigraphic profiles for the last 2800 years
J. H. TALLIS & E. A. LIVETT

789 Pool-and-hummock patterning in a southern Pennine blanket mire II. The formation and erosion of the pool system
J. H. TALLIS

805 Root pathogenic and arbuscular mycorrhizal fungi determine fecundity of asymptomatic plants in the field
K. K. NEWSHAM, A. H. FITTER & A. R. WATKINSON

815 The history of the Holocene vegetation in northern Spain from pollen analysis
M. C. PEÑALBA

833 Herbivory and the long-lived leaves of an Amazonian ant-tree
C. R. FONSECA

843 A survey of ultraviolet-B radiation in forests
M. J. BROWN, G. G. PARKER & N. E. POSNER

855 Life history variation and local adaptation within two populations of *Bouteloua rigidiseta* (Texas grama)
R. E. MILLER & N. L. FOWLER

865 Climate-induced annual variation in canopy tree growth in a Costa Rican tropical rain forest
D. C. CLARK & D. B. CLARK

873 Seedling herbivory in grassland: relative impact of vertebrate and invertebrate herbivores
P. E. HULME

881 Pollen representation of vegetation in Quaternary sediments: theory and method in patchy vegetation
S. SUGITA

899 The role of fire in the development of *Sphagnum*-dominated peatlands in western boreal Canada
P. KUHRY

911 Responses of tree species to hurricane winds in subtropical wet forest in Puerto Rico: implications for tropical tree life histories
J. K. ZIMMERMAN, E. M. EVERHAM III, R. B. WAIDE, D. J. LODGE, C. M. TAYLOR & N. V. L. BROKAW

923 The hazards of interpretation of static age structures as shown by stand reconstructions in a *Pinus contorta* – *Picea engelmannii* forest
E. A. JOHNSON, K. MIYANISHI & H. KLEB

Essay Review

933 Predicting dispersal spectra: a minimal set of hypotheses based on plant attributes
L. HUGHES, M. DUNLOP, K. FRENCH, M. R. LEISHMAN, B. RICE, L. RODGERSON & M. WESTOBY

Forum

951 Trade-offs, elasticities and the comparative method
K. SHEA, M. REES & S. N. WOOD

958 On trade-offs, elasticities and the comparative method: a reply to Shea, Rees & Wood
M. FRANCO & J. SILVERTOWN

Biological Flora of the British Isles

959 *Fallopia japonica* (Houtt.) Ronse Decraene
(*Reynoutria japonica* Houtt.; *Polygonum cuspidatum* Seib. & Zucc.)
D. J. BEERLING, J. P. BAILEY & A. P. CONOLLY

981 **Reviews**

989 **Index**